Федеральное государственное автономное образовательное учреждение
высшего образования
Университет ИТМО

Отчет по лабораторной работе №5

«Администрирование систем и сетей»

Выполнили:
Чжоу Хунсян
Группа: P34131

Желаемая оценка: 3

Преподаватель:
Афанасьев Дмитрий Борисович

2024 г.
Санкт-Петербург

Оглавление

Настройка FTP

Цели

Лабораторная работа помогает получить практические навыки по изучению следующих тем:

- Установление FTP-соединения
- Настройка параметров FTP-сервера
- Процедура передачи файлов на FTP-сервер

Топология

План работы

1. Настройка функции и параметров FTP-сервера.
2. Настройка локальных пользователей FTP.
3. Вход в систему FTP-сервера с FTP-клиента.
4. Выполнение операций с файлами в FTP-клиенте.

Процедура конфигурирования

Шаг 1. Настройте основные параметры устройств.

Задайте имена устройствам.

```
<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname AR1
[AR1]

<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]sysname AR2
[AR2]
```

Настройте IP-адреса устройств.

```
[AR1]interface g0/0/2
[AR1-GigabitEthernet0/0/2]ip address 10.0.12.1 24

[AR2]interface g0/0/2
[AR2-GigabitEthernet0/0/2]ip address 10.0.12.2 24
```

Сохраните конфигурационный файл для последующей проверки.

```
<AR1>save test1.cfg
 Are you sure to save the configuration to test1.cfg? (y/n)[n]:y
  It will take several minutes to save configuration file, please wait.......
  Configuration file had been saved successfully
  Note: The configuration file will take effect after being activated

<AR2>save test2.cfg
 Are you sure to save the configuration to test2.cfg? (y/n)[n]:y
  It will take several minutes to save configuration file, please wait.......
  Configuration file had been saved successfully
  Note: The configuration file will take effect after being activated
```

Выведите на экран текущий список файлов.

```
<AR1>dir
Directory of flash:/

  Idx  Attr     Size(Byte)  Date        Time(LMT)  FileName
    0  drw-              -  Dec 05 2024 22:33:39   dhcp
    1  -rw-        121,802  May 26 2014 09:20:58   portalpage.zip
    2  -rw-          2,263  Dec 05 2024 22:33:29   statemach.efs
    3  -rw-        828,482  May 26 2014 09:20:58   sslvpn.zip
    4  -rw-            249  Dec 05 2024 22:42:03   private-data.txt
    5  -rw-            847  Dec 05 2024 22:42:03   test1.cfg

1,090,732 KB total (784,456 KB free)

<AR2>dir
Directory of flash:/

  Idx  Attr     Size(Byte)  Date        Time(LMT)  FileName
    0  drw-              -  Dec 05 2024 22:33:35   dhcp
    1  -rw-        121,802  May 26 2014 09:20:58   portalpage.zip
    2  -rw-          2,263  Dec 05 2024 22:33:25   statemach.efs
    3  -rw-        828,482  May 26 2014 09:20:58   sslvpn.zip
    4  -rw-            249  Dec 05 2024 22:42:14   private-data.txt
    5  -rw-            847  Dec 05 2024 22:42:13   test2.cfg

1,090,732 KB total (784,456 KB free)
<AR2>
```

Шаг 2. Настройте функцию и параметры FTP-сервера на R2.

```
[AR2]ftp server enable
Info: Succeeded in starting the FTP server
```

Шаг 3. Настройте локальных пользователей FTP.

```
[AR2]aaa
[AR2-aaa]local-user ftp-client password cipher Huawei@123
Info: Add a new user.
[AR2-aaa]local-user ftp-client service-type ftp
[AR2-aaa]local-user ftp-client privilege level 15
[AR2-aaa]local-user ftp-client ftp-directory flash:/
```

Шаг 4. Выполните вход в систему FTP-сервера с FTP-клиента.

Выполните вход в FTP-клиент.

```
<AR1>ftp 10.0.12.2
Trying 10.0.12.2 ...

Press CTRL+K to abort
Connected to 10.0.12.2.
220 FTP service ready.
User(10.0.12.2:(none)):ftp-client
331 Password required for ftp-client.
Enter password:
230 User logged in.

[AR1-ftp]
```

Шаг 5. Выполните операции в файловой системе на R2.

Настройте режим передачи.

```
[AR1-ftp]ascii
200 Type set to A.
```

Загрузите конфигурационный файл.

```
[AR1-ftp]get test2.cfg
200 Port command okay.
150 Opening ASCII mode data connection for test2.cfg.
226 Transfer complete.
FTP: 847 byte(s) received in 0.230 second(s) 3.68Kbyte(s)/sec.
```

Удалите конфигурационный файл.

```
[AR1-ftp]delete test2.cfg
Warning: The contents of file test2.cfg cannot be recycled. Continue? (y/n)[n]:y

250 DELE command successful.
```

Выгрузите конфигурационный файл.

```
[AR1-ftp]put test1.cfg
200 Port command okay.
150 Opening ASCII mode data connection for test1.cfg.

 100%
226 Transfer complete.
FTP: 847 byte(s) sent in 0.230 second(s) 3.68Kbyte(s)/sec.
```

Закройте FTP-соединение.

```
[AR1-ftp]bye
221 Server closing.
```

Проверка

```
<AR1>dir
Directory of flash:/

  Idx  Attr     Size(Byte)  Date        Time(LMT)  FileName
    0  drw-              -  Dec 05 2024 22:33:39   dhcp
    1  -rw-        121,802  May 26 2014 09:20:58   portalpage.zip
    2  -rw-          2,263  Dec 05 2024 22:33:29   statemach.efs
    3  -rw-        828,482  May 26 2014 09:20:58   sslvpn.zip
    4  -rw-            249  Dec 05 2024 22:42:03   private-data.txt
    5  -rw-            847  Dec 05 2024 22:48:52   test2.cfg
    6  -rw-            847  Dec 05 2024 22:42:03   test1.cfg

1,090,732 KB total (784,452 KB free)

<AR2>dir
Directory of flash:/

  Idx  Attr     Size(Byte)  Date        Time(LMT)  FileName
    0  drw-              -  Dec 05 2024 22:33:35   dhcp
    1  -rw-        121,802  May 26 2014 09:20:58   portalpage.zip
    2  -rw-          2,263  Dec 05 2024 22:33:25   statemach.efs
    3  -rw-        828,482  May 26 2014 09:20:58   sslvpn.zip
    4  -rw-            249  Dec 05 2024 22:42:14   private-data.txt
    5  -rw-            847  Dec 05 2024 22:49:56   test1.cfg

1,090,732 KB total (784,456 KB free)
```

Справочные конфигурации

AR1

```
[V200R003C00]
#
 sysname AR1
#
 snmp-agent local-engineid 800007DB03000000000000
 snmp-agent
#
 clock timezone China-Standard-Time minus 08:00:00
#
portal local-server load portalpage.zip
#
 drop illegal-mac alarm
#
 set cpu-usage threshold 80 restore 75
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$K8m.Nt84DZ}e#<0`8bmE3Uw}%$%$
 local-user admin service-type http
#
firewall zone Local
 priority 15
#
interface GigabitEthernet0/0/0
#
interface GigabitEthernet0/0/1
#
interface GigabitEthernet0/0/2
 ip address 10.0.12.1 255.255.255.0
#
interface NULL0
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
user-interface vty 16 20
#
wlan ac
#
return
```

AR2

```
[V200R003C00]
#
 sysname AR2
 ftp server enable
#
 snmp-agent local-engineid 800007DB03000000000000
 snmp-agent
#
 clock timezone China-Standard-Time minus 08:00:00
#
portal local-server load portalpage.zip
#
 drop illegal-mac alarm
#
 set cpu-usage threshold 80 restore 75
#
aaa
 authentication-scheme default
```

```
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$K8m.Nt84DZ}e#<0`8bmE3Uw}%$%$
 local-user admin service-type http
 local-user ftp-client password cipher %$%$3gz=Y!zoc:@;CmQ10i|W^z88%$%$
 local-user ftp-client privilege level 15
 local-user ftp-client ftp-directory flash:/
 local-user ftp-client service-type ftp
#
firewall zone Local
 priority 15
#
interface GigabitEthernet0/0/0
#
interface GigabitEthernet0/0/1
#
interface GigabitEthernet0/0/2
 ip address 10.0.12.2 255.255.255.0
#
interface NULL0
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
user-interface vty 16 20
#
wlan ac
#
return
```

Конфигурирование DHCP

Цели

Лабораторная работа помогает получить практические навыки по изучению следующих тем:

- Настройка пула адресов интерфейса на DHCP-сервере.
- Настройка глобального пула адресов на DHCP-сервере.
- Использование DHCP для статического назначения IP-адресов.

Топология

План работы

1. Настройка DHCP-сервера.
2. Настройка DHCP-клиентов.

Процедура конфигурирования

Шаг 1. Настройте основные параметры.

Настройте на маршрутизаторе R2 адреса интерфейсов.

```
[AR2]interface g0/0/0
[AR2-GigabitEthernet0/0/0]ip address 10.0.12.2 24
[AR2-GigabitEthernet0/0/0]interface g0/0/1
[AR2-GigabitEthernet0/0/1]ip address 10.0.23.2 24
```

Шаг 2. Включите функцию DHCP.

```
[AR1]dhcp enable
Info: The operation may take a few seconds. Please wait for a moment.done.

[AR2]dhcp enable
Info: The operation may take a few seconds. Please wait for a moment.done.

[AR3]dhcp enable
Info: The operation may take a few seconds. Please wait for a moment.done.
```

Шаг 3. Настройте пул адресов.

Настройте пул IP-адресов на GE 0/0/3 маршрутизатора R2 для назначения IP-адреса маршрутизатору R1.

```
[AR2]interface g0/0/0
[AR2-GigabitEthernet0/0/0]dhcp select interface
[AR2-GigabitEthernet0/0/0]dhcp server dns-list 10.0.12.2
```

Настройте глобальный пул адресов.

```
[AR2-GigabitEthernet0/0/0]ip pool GlobalPool
Info: It's successful to create an IP address pool.
[AR2-ip-pool-GlocalPool]network 10.0.23.0 mask 24
[AR2-ip-pool-GlocalPool]network 10.0.23.0 mask 24
[AR2-ip-pool-GlocalPool]dns-list 10.0.23.2
[AR2-ip-pool-GlocalPool]gateway-list 10.0.23.2
[AR2-ip-pool-GlocalPool]lease day 2 hour 2
[AR2-ip-pool-GlocalPool]static-bind ip-address 10.0.23.3 mac-address 00e0-fc56-5
e09
[AR2-ip-pool-GlocalPool]quit
```

Шаг 4. Включите функцию DHCP-сервера на GigabitEthernet 0/0/4 маршрутизатора R2 для назначения IP-адреса маршрутизатору R3.

```
[AR2]interface g0/0/1
[AR2-GigabitEthernet0/0/1]dhcp select global
```

Шаг 5. Настройте DHCP-клиенты.

```
[AR1]interface g0/0/0
[AR1-GigabitEthernet0/0/0]ip address dhcp-alloc

[AR3]interface g0/0/0
[AR3-GigabitEthernet0/0/0]ip address dhcp-alloc
```

Проверка

```
[AR1]display ip interface brief
*down: administratively down
^down: standby
(l): loopback
(s): spoofing
The number of interface that is UP in Physical is 2
The number of interface that is DOWN in Physical is 2
The number of interface that is UP in Protocol is 2
The number of interface that is DOWN in Protocol is 2

Interface                         IP Address/Mask      Physical   Protocol
GigabitEthernet0/0/0              10.0.12.254/24       up         up
GigabitEthernet0/0/1              unassigned           down       down
GigabitEthernet0/0/2              unassigned           down       down
NULL0                             unassigned           up         up(s)

[AR1]display dns server
Type:
D:Dynamic     S:Static

No.  Type    IP Address
1     D      2.12.0.10

No configured ipv6 dns servers.

[AR1]display ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
         Destinations : 8        Routes : 8

Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface

        0.0.0.0/0   Unr     60   0           D   10.0.12.2       GigabitEthernet
0/0/0
      10.0.12.0/24  Direct  0    0           D   10.0.12.254     GigabitEthernet
0/0/0
    10.0.12.254/32  Direct  0    0           D   127.0.0.1       GigabitEthernet
0/0/0
    10.0.12.255/32  Direct  0    0           D   127.0.0.1       GigabitEthernet
0/0/0
      127.0.0.0/8   Direct  0    0           D   127.0.0.1       InLoopBack0
      127.0.0.1/32  Direct  0    0           D   127.0.0.1       InLoopBack0
127.255.255.255/32  Direct  0    0           D   127.0.0.1       InLoopBack0
255.255.255.255/32  Direct  0    0           D   127.0.0.1       InLoopBack0

[AR3]display ip interface brief
*down: administratively down
^down: standby
(l): loopback
(s): spoofing
The number of interface that is UP in Physical is 2
The number of interface that is DOWN in Physical is 2
```

```
The number of interface that is UP in Protocol is 2
The number of interface that is DOWN in Protocol is 2

Interface                         IP Address/Mask      Physical   Protocol
GigabitEthernet0/0/0              10.0.23.254/24       up         up
GigabitEthernet0/0/1              unassigned           down       down
GigabitEthernet0/0/2              unassigned           down       down
NULL0                             unassigned           up         up(s)

[AR3]display dns server
Type:
D:Dynamic     S:Static

No.  Type    IP Address
1     D      2.23.0.10

No configured ipv6 dns servers.

[AR3]display ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
         Destinations : 8        Routes : 8

Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface

        0.0.0.0/0   Unr     60   0           D   10.0.23.2       GigabitEthernet
0/0/0
      10.0.23.0/24  Direct  0    0           D   10.0.23.254     GigabitEthernet
0/0/0
    10.0.23.254/32  Direct  0    0           D   127.0.0.1       GigabitEthernet
0/0/0
    10.0.23.255/32  Direct  0    0           D   127.0.0.1       GigabitEthernet
0/0/0
      127.0.0.0/8   Direct  0    0           D   127.0.0.1       InLoopBack0
      127.0.0.1/32  Direct  0    0           D   127.0.0.1       InLoopBack0
127.255.255.255/32  Direct  0    0           D   127.0.0.1       InLoopBack0
255.255.255.255/32  Direct  0    0           D   127.0.0.1       InLoopBack0
```

Вывод на экран информации о назначении адресов на R2

```
[AR2]display ip pool name GlobalPool
  Pool-name      : GlobalPool
  Pool-No        : 1
  Lease          : 2 Days 2 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : 10.0.23.2
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Local           Status           : Unlocked
  Gateway-0      : 10.0.23.2
  Mask           : 255.255.255.0
  VPN instance   : --
 ------------------------------------------------------------------------------
         Start           End     Total  Used  Idle(Expired)  Conflict  Disable
 ------------------------------------------------------------------------------
       10.0.23.1     10.0.23.254   253     2        251(0)         0        0
 ------------------------------------------------------------------------------

[AR2]dis ip pool int GigabitEthernet0/0/0
  Pool-name      : GigabitEthernet0/0/0
  Pool-No        : 0
  Lease          : 1 Days 0 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : 10.0.12.2
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Interface       Status           : Unlocked
  Gateway-0      : 10.0.12.2
  Mask           : 255.255.255.0
  VPN instance   : --
```

```
-------------------------------------------------------------------------------
        Start           End     Total  Used  Idle(Expired)  Conflict  Disable
-------------------------------------------------------------------------------
      10.0.12.1     10.0.12.254   253     1        252(0)         0         0
-------------------------------------------------------------------------------
```

Справочные конфигурации

AR1

```
[V200R003C00]
#
 sysname AR1
#
 snmp-agent local-engineid 800007DB03000000000000
 snmp-agent
#
 clock timezone China-Standard-Time minus 08:00:00
#
portal local-server load portalpage.zip
#
 drop illegal-mac alarm
#
 set cpu-usage threshold 80 restore 75
#
dhcp enable
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$K8m.Nt84DZ}e#<0`8bmE3Uw}%$%$
 local-user admin service-type http
#
firewall zone Local
 priority 15
#
interface GigabitEthernet0/0/0
 ip address dhcp-alloc
#
interface GigabitEthernet0/0/1
#
interface GigabitEthernet0/0/2
#
interface NULL0
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
user-interface vty 16 20
#
wlan ac
#
return
```

AR2

```
[V200R003C00]
#
 sysname AR2
#
 snmp-agent local-engineid 800007DB03000000000000
 snmp-agent
#
 clock timezone China-Standard-Time minus 08:00:00
#
portal local-server load portalpage.zip
```

```
#
 drop illegal-mac alarm
#
 set cpu-usage threshold 80 restore 75
#
dhcp enable
#
ip pool GlocalPool
 gateway-list 10.0.23.2
 network 10.0.23.0 mask 255.255.255.0
 static-bind ip-address 10.0.23.3 mac-address 00e0-fc56-5e09
 lease day 2 hour 2 minute 0
 dns-list 10.0.23.2
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$K8m.Nt84DZ}e#<0`8bmE3Uw}%$%$
 local-user admin service-type http
#
firewall zone Local
 priority 15
#
interface GigabitEthernet0/0/0
 ip address 10.0.12.2 255.255.255.0
 dhcp select interface
 dhcp server dns-list 10.0.12.2
#
interface GigabitEthernet0/0/1
 ip address 10.0.23.2 255.255.255.0
 dhcp select global
#
interface GigabitEthernet0/0/2
#
interface NULL0
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
user-interface vty 16 20
#
wlan ac
#
return
```

AR3

```
[V200R003C00]
#
 sysname AR3
#
 snmp-agent local-engineid 800007DB03000000000000
 snmp-agent
#
 clock timezone China-Standard-Time minus 08:00:00
#
portal local-server load portalpage.zip
#
 drop illegal-mac alarm
#
 set cpu-usage threshold 80 restore 75
#
dhcp enable
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
```

```
 domain default_admin
 local-user admin password cipher %$%$K8m.Nt84DZ}e#<0`8bmE3Uw}%$%$
 local-user admin service-type http
#
firewall zone Local
 priority 15
#
interface GigabitEthernet0/0/0
 ip address dhcp-alloc
#
interface GigabitEthernet0/0/1
#
interface GigabitEthernet0/0/2
#
interface NULL0
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
user-interface vty 16 20
#
wlan ac
#
return
```

Вывод

В ходе лабораторной работы познакомились с FTP и DHCP.